Disaster Prevention

Emergency Disaster Response Task Force (TEC-FORCE)

<Main dispatch achievements>	Number of team members	Total number of members (person-days)
2021: Heavy snowfall on January 7	45	79
2021: Typhoon No. 10 (Mirinae)	9	42
2021: Record-breaking short-duration heavy rainfall in Fukui Prefecture	9	42
2021: Heavy snowfall starting December 25	26	54
2022: Heavy rainfall starting August 4	41	117
2022: Typhoon No. 14 (Nanmadol)	2	4
2022: Avian influenza	2	2
2023: Heavy snowfall starting January 24	64	116
2023: Landslide in Totsukawa Village, Nara Prefecture	3	4
2023: Typhoon No. 2 (Mawar) and associated active fronts causing heavy rainfall	14	20
2023: Classical swine fever in Minami Awaji City, Hyogo Prefecture	1	1
2023: Typhoon No. 7 (Lan)	17	19
2023: Landslide on National Route 169 in Shimokitayama Village, Nara Prefecture	14	20
2024: Noto Peninsula Earthquake	316	2198
2024: Heavy rainfall in the Noto Peninsula of Ishikawa Prefecture	58	383

Disaster response

Nighttime recovery work with lighting vehicles
[Landslide in Nara Prefecture, May 2022]

Disaster damage survey
[Noto Peninsula Earthquake]

Disaster drills and prevention education

Wide-area land route securing drill (using RC backhoe)
[2024 Comprehensive disaster drill for large-scale tsunami]

Water supply support
(Ishikawa Prefecture deployment)
[Noto Peninsula Earthquake]

Crew protection support
[Heavy snow from January 24, 2023]

Disaster prevention education
[Disaster prevention education class in November 2024]

Measures against Great Earthquakes and Tsunamis in the Nankai Trough

[Damage assumption for directly controlled national highways]

	Flood extension	Major bridge damage	Major damage to coastal retaining walls	Debris accumulation
Wakayama Prefecture	Approx. 100 km	53 bridges	Approx. 20 km	Approx. 30 km

Surveys by Wakayama and Kinan River National Highway Offices as of May 2014

Wakayama Prefecture

Legend:
- Major bridge damage
- Major damage to coastal retaining walls
- Debris accumulation
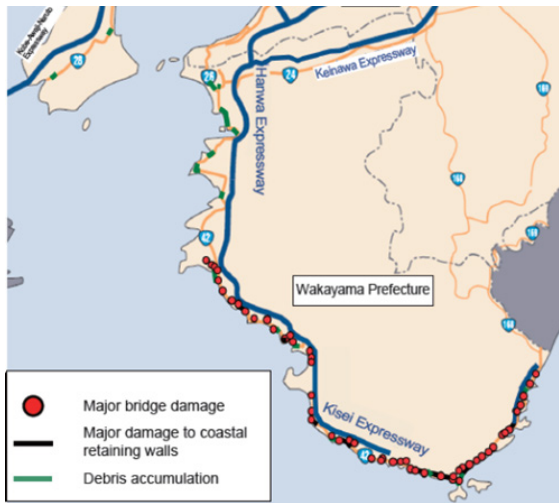
From Road Clearing Plan (R7.1 revised edition), Wakayama Prefecture

[Road clearing plan]

- The Wakayama Prefecture Road Clearing Plan (R7.1 revised edition) involves selecting priority roads for clearing as "clearing routes," based on tsunami damage projections, taking into account the emergency transportation network and other factors.
- To ensure rescue and relief routes aimed at saving lives, we set phased objectives for "Road Clearing" operations.
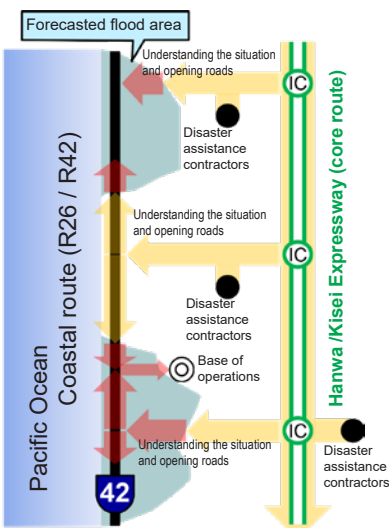
[STEP1 ⇒ Largely completed within 24 hours after the disaster]
Ensuring trunk routes and routes to coastal areas (outside of flood-prone areas)
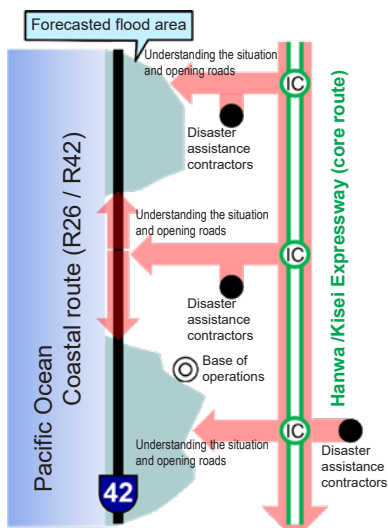
[STEP2 ⇒ Largely completed within 48 hours after the disaster]
Once the tsunami warning has been lifted, securing routes to the base of operations (city hall, etc.)

[Key Regional Disaster Prevention Base in Sakai Section 2 at Sakai Semboku Port]

- This disaster prevention base plays a crucial role in large-scale disasters caused by earthquakes and tsunamis in the Nankai Trough, including relay and distribution of relief supplies, maritime transport support, assembly and camp functions for wide-area support forces, and disaster medical support functions. It serves as a relaxation space for citizens in normal times.

Green space (Area: 27.9 ha)

Kinki Area Rinkai Disaster Management Base

Hanshin Expressway

Sambo IC

Seismic Reinforced Quay
(Water Depth: 7.5 m, Length: 130 m)

Port Access Road (Length: 3.5 km)

[Emergency activities at the time of earthquake occurrence]

- Conduct rapid disaster situation surveys using helicopters and CCTV after the disaster and dispatch the TEC-FORCE, coordinating with relevant agencies for drainage activities in tsunami-flooded areas using drainage pump vehicles.

- Disaster situation survey (image)
- Drainage pump vehicle and lighting vehicle (image)
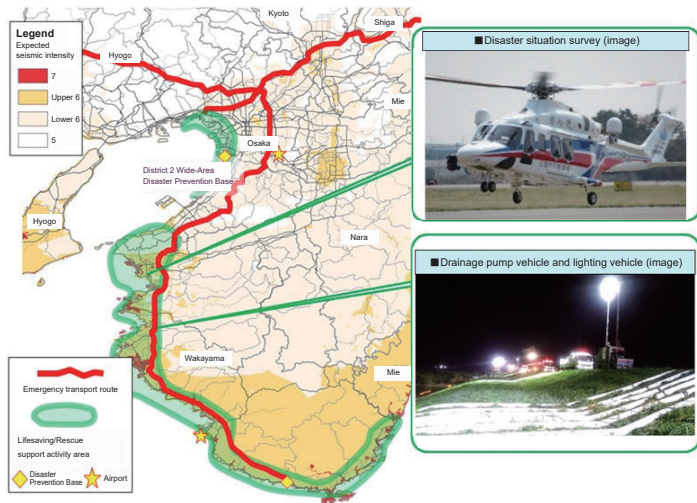
Infrastructure DX

Promoting Digital Transformation (DX) in the Infrastructure Sector

By utilizing data and digital technology, we aim to transform social capital and public services based on citizens' needs while also reforming operations, organizations, processes, construction industry practices, and staff working styles to achieve a safe, secure, and enriched life.

DX Initiatives in the Infrastructure Sector by the Kinki Regional Development Bureau

Transformation of services such as administrative procedures

Speeding up administrative procedures
- Streamlining maintenance and management by building a road data platform
- Indication of flood-prone areas utilizing 3D mapping software
- Remote land boundary verification in hazardous areas

Indication of flood-prone areas

Improving services in daily life
- Streamlining and advancing river management through the digitization of river status ledgers
- Going online with construction industry-related procedures

Services to enhance safety in daily life
- Demonstration experiment of autonomous driving technology in parks
- Streamlining container gate operations at Hanshin Port through the introduction of CONPAS

Simplifying procedures at the gate with CONPAS

Reforming operational process and way of working

Operational process transformation
- Streamlining and advancing construction production system utilizing BIM/CIM
- Utilizing BIM with EIR in facility maintenance projects
- Workstyle improvements utilizing RPA
- Promotion of online registration applications

BIM/CIM data utilization

Streamlined inspection and management operations
- Seamless transition from disaster damage assessment to reconstruction work
- Streamlining and advancing park management through cloud-based urban park ledgers and related systems
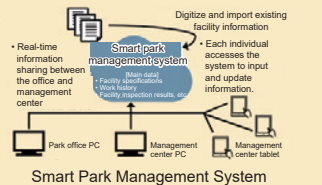
Smart Park Management System

Human resource development support
- Developing personnel capable of utilizing 3D data and digital technologies (Regional Development Bureau, local governments, etc.)
- Workstyle improvements utilizing RPA
- Providing support for local governments' DX efforts in urban development

Improving on-site safety and efficiency

Achieving a safe and comfortable working environment
- Enhancing safety through unmanned construction
- Speeding up TEC-FORCE activities through real-time data utilization
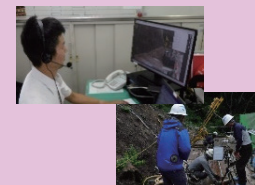- Speeding up the investigation of hazardous areas during disasters

Image of remote presence

Improving work efficiency utilizing AI and other technologies
- Remote supervision and inspection in areas with poor communication coverage
- Automatic detection of traffic disruptions through AI-enabled CCTV cameras
- Visualization and digitization of information on underground facilities through 3D modeling
- Advanced and streamlined facility inspections (erosion control) through fully automated drone flights
- Advanced dam management utilizing AI

Automatic detection of stranded vehicles

Efficiently mastering skills through digitalization
- Utilization of manuals to create 3D construction data

Promoting workstyle reforms in the construction industry

Streamlined Guide for Preparing Civil Engineering Work Documents

By streamlining construction document preparation and clarifying the division of roles in document creation between contractors and clients, we aim to reduce the time required for documentation and promote workstyle reforms.

Streamlined Guide for Preparing Civil Engineering Work Documents

By enhancing communication between contractors and clients, we aim to facilitate appropriate design changes, expedite discussions, and ensure the proper and smooth execution of construction contracts, thereby promoting workstyle reforms.

We will create revised editions of the guides to reflect the questionnaire survey results etc. from the industry association thereby further promoting workstyle reforms of both contractors and clients.

Human resource development to promote dx in the infrastructure sector

Based at the Kinki Infrastructure DX Promotion Center (Hirakata City, Osaka Prefecture), we are working to develop human resources who can utilize BIM/CIM, ICT construction, 3D data, etc., by acquiring knowledge and skills related to digital technology.

We also support human resource development in the public and private sectors, including local governments and companies, with the aim of promoting DX in the infrastructure sector.
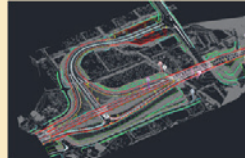
About the Kinki Infrastructure DX Promotion Center:
The center focuses on training, hands-on experience, and information dissemination to develop and secure personnel to advance DX.

Experience — Infrastructure DX experience for students, the general public, and foreign trainees
- Experience in remote monitoring, AI, and VR-based DX technologies
- Introduction to private-sector innovations and NETIS technologies through video presentations

ICT construction training overview

Development — Training for national and local government agencies and construction professionals
- Practical training and hands-on experience in BIM/CIM and ICT-based construction
- Training and hands-on experience in crewless (remote) construction
- Training in productivity improvement

BIM/CIM training overview

Information dissemination — Information is disseminated via websites, SNS, and other platforms
- Information on new technologies adopted by companies
- Initiatives related to i-Construction, BIM/CIM, and other government-private sector efforts
- Regional construction industry initiatives such as DX awards and DX competitions